

MECHANICAL SPECIFICATIONS AND NOTES

DUCTWORK

GENERAL:

COMPLY WITH NFPA 90A, "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING, VENTILATING SYSTEMS" AND 1997 UMC, EXCEPT AS INDICATED OTHERWISE.

PRODUCTS:

SHEET METAL MATERIALS, GENERAL: PROVIDE THE FOLLOWING MATERIALS WHERE INDICATED. PACKAGE AND MARK SHEET METAL MATERIALS AS SPECIFIED IN ASTM A 700.

GALVANIZED SHEET STEEL: LOCK-FORMING QUALITY, ASTM A 527, COATING DESIGNATION G 90, MILL PHOSPHATIZED FINISH FOR EXPOSED SURFACES OF DUCTS EXPOSED TO VIEW.

REINFORCEMENT SHAPES AND PLATES: UNLESS OTHERWISE INDICATED, PROVIDE GALVANIZED STEEL REINFORCING WHERE INSTALLED ON GALVANIZED SHEET METAL DUCTS.

HANGERS AND SUPPORTS: PROVIDE THE FOLLOWING HANGER AND SUPPORT COMPONENTS AS INDICATED.

BUILDING ATTACHMENTS: STRUCTURAL STEEL FASTENERS APPROPRIATE FOR BUILDING MATERIALS.

HANGERS: GALVANIZED SHEET STEEL, OR ROUND, UNCOATED STEEL, THREADED ROD.

STRAPS AND ROD SIZES: CONFORM WITH TABLE 4-1 IN SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 1995 EDITION, FOR SHEET STEEL WIDTH AND GAGE AND STEEL ROD DIAMETERS.

DUCT ATTACHMENTS: SHEET METAL SCREWS, BLIND RIVETS, OR SELF-TAPPING METAL SCREWS, COMPATIBLE WITH DUCT MATERIALS.

RECTANGULAR DUCT FABRICATION: EXCEPT AS OTHERWISE INDICATED, FABRICATE RECTANGULAR DUCTS WITH GALVANIZED SHEET STEEL, IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", TABLES 1-3 THROUGH 1-25, INCLUDING THEIR ASSOCIATED DETAILS. CONFORM TO THE REQUIREMENTS IN THE REFERENCED STANDARD FOR METAL THICKNESS, REINFORCING TYPES AND INTERVALS, TIE ROD APPLICATIONS, AND JOINT TYPES AND INTERVALS.

EXECUTION:

LOCATE DUCTS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY, PARALLEL AND PERPENDICULAR TO BUILDING LINES; AVOID DIAGONAL RUNS. INSTALL DUCT SYSTEMS IN SHORTEST ROUTE THAT DOES NOT OBSTRUCT USEABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT.

EQUIPMENT CONNECTIONS: CONNECT EQUIPMENT WITH FLEXIBLE CONNECTORS.

FLEXIBLE DUCTS

FLEXIBLE DUCTS - INSULATED: FACTORY-FABRICATED, INSULATED, ROUND DUCT, WITH AN OUTER JACKET ENCLOSING 1-1/2" THICK, GLASS FIBER INSULATION AROUND A CONTINUOUS INNER LINER.

REINFORCEMENT: STEEL-WIRE HELIX ENCAPSULATED IN THE INNER LINER.

OUTER JACKET: GLASS-REINFORCED, SILVER MYLAR WITH A CONTINUOUS HANGING TAB, INTEGRAL FIBERGLASS TAPE, AND NYLON HANGING CORD.

INNER LINER: POLYETHYLENE FILM.

MANUAL VOLUME CONTROL DAMPERS

PROVIDE FACTORY-FABRICATED VOLUME CONTROL DAMPERS, COMPLETE WITH REQUIRED HARDWARE AND ACCESSORIES. LOCKING QUADRANT SHALL BE PROVIDED FOR ALL DAMPERS. STIFFEN DAMPER BLADES TO PROVIDE STABILITY UNDER OPERATING CONDITIONS. PROVIDE LOCKING DEVICE TO HOLD SINGLE-BLADE DAMPERS IN A FIXED POSITION WITHOUT VIBRATION. CLOSE DUCT PENETRATIONS FOR DAMPER COMPONENTS TO SEAL DUCT CONSISTENT WITH PRESSURE CLASS.

STANDARD VOLUME CONTROL DAMPERS: SINGLE-BLADE, OPPOSED-BLADE DESIGN AS INDICATED, LOW-LEAKAGE RATING, WITH LINKAGE OUTSIDE OF AIRSTREAM, AND SUITABLE FOR HORIZONTAL OR VERTICAL APPLICATIONS.

FLEXIBLE DUCT CONICAL TAPS: FLEX MASTER CB-D WITH INTEGRAL BALANCING DAMPER.

DUCT INSULATION

ALL MATERIALS USED IN INSULATION SHALL HAVE FLAME SPREAD <25, SMOKE DEVELOPED <50 PER ASTM E84.

SUPPLY DUCTS/RETURN DUCTS: (SEE M103 FOR EXTERIOR DUCT INSULATION REQ.) BLANKET: ASTM C 553 TYPE II, CLASS F-1, JACKETED FLEXIBLE BLANKETS. THERMAL CONDUCTIVITY: 28 AVERAGE MAXIMUM, AT 75° F MEAN TEMPERATURE.

DENSITY: 1 PCF AVERAGE MAXIMUM.

ADHESIVE: NON-FLAMMABLE SOLVENT BASED ON UL CLASSIFIED. TEMPERATURE RANGE FROM -20 TO 180° F.

BLANKET INSULATION: INSTALL TIGHT AND SMOOTH. SECURE TO DUCTS HAVING LONG SIDES OR DIAMETERS AS FOLLOWS: SMALLER THAN 24 INCHES: BONDING ADHESIVE APPLIED IN 6" WIDE TRANSVERSE STRIPS ON 12" CENTERS. OVERLAP JOINTS 3". SEAL JOINTS, BREAKS AND PUNCTURES WITH VAPOR BARRIER COMPOUND. BLANKET INSULATION: THICKNESS 1-1/2".

BAROMETRIC BACKDRAFT DAMPERS

FURNISH AND INSTALL, AT LOCATIONS SHOWN ON PLANS, COUNTERBALANCE BACKDRAFT DAMPERS THAT MEET THE FOLLOWING MINIMUM CONSTRUCTION STANDARDS: FRAME SHALL BE .09" WALL THICKNESS WITH 12 GAGE GALVANIZED STEEL STRUCTURE AT EACH CORNER. BLADES SHALL BE .025" MINIMUM ROLL-FORMED ALUMINUM WITH EXTRUDED VINYL BLADE EDGE SEALS MECHANICALLY LOCKED INTO BLADE EDGE. ADHESIVE OR CLIP-ON TYPE SEALS ARE UNACCEPTABLE. BLADES SHALL INCLUDE FIELD ADJUSTABLE, ZINC PLATED STEEL COUNTER-BALANCE WEIGHTS TO ALLOW PRESSURE RELIEF AT LESS THAN .01" W.G. BEARINGS SHALL BE CORROSION RESISTANT, LONG LIFE SYNTHETIC TYPE FOR QUITE OPERATION. LINKAGE SHALL BE 1/2" WIDE TIEBAR CONCEALED IN FRAME.

TESTING AND BALANCING

TESTING, ADJUSTING AND BALANCING SHALL BE ACCOMPLISHED BY AN INDEPENDENT FIRM CERTIFIED FOR TESTING AND BALANCING BY THE ASSOCIATED AIR BALANCE COUNCIL (AABC), OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PRIOR TO TESTING AND BALANCING, THE CONTRACTOR SHALL VERIFY THAT THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING AS SPECIFIED.

CLEAN FILTERS SHALL BE INSTALLED AT THE BEGINNING OF THE TESTING AND BALANCING EFFORT. EACH SYSTEM SHALL BE ADJUSTED UNTIL ALL FLOW QUANTITIES ARE WITHIN +10% AND -0%. DAMPERS SHALL BE CHECKED FOR TIGHT SHUTOFF. CONTRACTOR SHALL PERMANENTLY MARK AND IDENTIFY THE LOCATION OF ANY TEST PORTS AND ALL ADJUSTMENT DEVICES, INCLUDING SPLITTERS AND DAMPERS.

TESTING, ADJUSTING AND BALANCING SHALL BE COORDINATED WITH THE CONTROL SYSTEM INSTALLATION. ALL CONTROL COMPONENTS SHALL BE VERIFIED TO BE PROPERLY INSTALLED AND OPERATING. TESTING AND BALANCING FIRM SHALL SUBMIT FINAL REPORT TO ARCHITECT/ENGINEER FOR APPROVAL.

SCOPE OF WORK: TESTING AND BALANCING FIRM SHALL BE RESPONSIBLE FOR THE PERFORMANCE OF THE AIR HANDLING UNIT AND THE VAV BOXES ASSOCIATED WITH THE NEW FLOOR PLAN ONLY.

SUBMITTALS

CONTRACTOR SHALL SUBMIT 5 COPIES OF THE SCHEDULED AND/OR SPECIFIED ITEMS TO THE ARCHITECT/ENGINEER FOR REVIEW.

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE SAFETY OF HIMSELF, HIS EMPLOYEES AND OTHER PERSONS IN THE AREA, AS WELL AS FOR THE PROTECTION AND THE SAFETY OF THE IMPROVEMENTS BEING ERRECTED AND THE PROPERTY OF HIMSELF AND OTHER PERSONS, AS A RESULT OF HIS OPERATIONS HEREUNDER.
2. THE CONTRACTOR SHALL BE FULLY AND COMPLETELY LIABLE AT HIS OWN EXPENSE FOR DESIGN, CONSTRUCTION, INSTALLATION AND USE OR NON-USE OF ALL ITEMS AND METHODS INCIDENT TO PERFORMANCE OF THE CONTRACT, AND FOR ALL LOSS, DAMAGE OR INJURY INCIDENT THERETO EITHER PERSON OR PROPERTY, INCLUDING WITHOUT LIMITATION THE ADEQUACY OF ALL TEMPORARY SUPPORTS, SHORING, BRACING, SCAFFOLDING, MACHINERY OF EQUIPMENT, SAFETY PRECAUTIONS OF DEVICES, AND SIMILAR ITEMS OF DEVICES USED BY HIM DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT AND DISCREPANCIES TO THE CONTRACTING OFFICER PRIOR TO BEGINNING ANY WORK. COMMENCEMENT OF WORK WILL BE CONSIDERED AS CONTRACTOR ACCEPTANCE OF CONDITIONS.
4. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, AND EQUIPMENT NECESSARY TO PROPERLY COMPLETE THE WORK, INCLUDING ITEMS NOT SPECIFICALLY SET FORTH IN THE CONSTRUCTION DOCUMENTS WHICH ARE NECESSARY TO COMPRISE A FINISHED PRODUCT.
5. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE AREA WHERE THE WORK IS TO OCCUR. IT WILL BE UNDERSTOOD THAT THE CONTRACTOR WILL ACCEPT ALL CONDITIONS AS THEY NOW EXIST AT THE SITE.
6. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCEMENT OF CONSTRUCTION.
7. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH CONTRACTING OFFICER.
8. THE CONTRACTOR SHALL, AT ALL TIMES, ADHERE TO REQUIREMENTS OF ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AND RESTRICTIONS.
9. THE CONTRACTOR SHALL OBTAIN AND BE RESPONSIBLE FOR ALL FEES, PERMITS, AND INSPECTIONS REQUIRED AND ASSOCIATED WITH ALL PHASES OF WORK.
10. THE CONTRACTOR SHALL COORDINATE ALL COLORS WITH CONTRACTING OFFICER.
11. THE CONTRACTOR SHALL FOLLOW PUBLISHED MANUFACTURER'S GUIDELINES FOR THE INSTALLATION OF ALL MATERIALS AND EQUIP.
12. THERE SHALL BE A ONE (1) YEAR GUARANTEE ON ALL WORK.
13. THESE DRAWINGS ARE SCHEMATIC IN NATURE, AND DO NOT SHOW EXACT LOCATIONS, ETC. IT IS LEFT TO THE DESIGNER TO PROVIDE NECESSARY ITEMS IN AN APPROPRIATE MANNER TO RESULT IN A PROPERLY FUNCTIONING SYSTEM.

KEYED NOTES:

- 1 SEE DETAIL 2-M101 FOR DRYER VENT DETAIL.
- 2 DOOR LOUVERS. SEE ARCHITECTURAL SCHEDULES.
- 3 WALL MOUNTED SWITCH WITH ILLUMINATED WARNING LIGHT. LIGHT SHALL INDICATE OPERATIONAL STATE OF EXHAUST FAN. INTERLOCK SWITCH WITH EF-1. PROVIDE WARNING SIGN READING: "VENTILATION SYSTEM SHOULD OPERATE CONTINUOUSLY. DO NOT ENTER UNLESS VENTILATION SYSTEM HAS OPERATED AT LEAST TEN MINUTES."
- 4 OPTIONAL EQUIPMENT. MAY BE APPLICABLE IN CERTAIN CLIMATES.
- 5 BAROMETRIC BACKDRAFT DAMPER. ARROW INDICATES THE DIRECTION OF AIR FLOW.

AHU-1 CU-1 (OPTIONAL) DX SPLIT SYSTEM:

SIZE UNITS IN ORDER TO MAINTAIN THE PESTICIDE STORAGE BUILDING AT MIN 50°F AND A MAX 100°F. THE AIR HANDLER SHALL BE 100% OUTSIDE AIR ONLY. ROUTE CONDENSATE PIPE TO FLOOR DRAIN. PROVIDE UNIT WITH CORROSION RESISTANT COIL, FAN, AND HOUSING. SUSPEND AIR HANDLER FROM STRUCTURE WITH SPRING ISOLATORS. PROVIDE WITH PROGRAMMABLE THERMOSTAT AND LOCKABLE COVER. INTERLOCK WITH EF-1. ALL DUCTWORK AND AIR DEVICES SHALL ALSO BE CORROSION RESISTANT. A HEAT PUMP MODEL SHALL BE USED FOR HEATING. IN AMBIENT CONDITIONS THAT DO NOT ALLOW HEAT PUMP, AN ELECTRIC HEATING COIL SHALL BE SUBSTITUTED.

IF THE AMBIENT CONDITIONS MEET THE REQUIRED CRITERIA; THE DX SPLIT SYSTEM AND OPTIONAL OUTSIDE AIR LOUVER MAY BE ELIMINATED.

AHU-2 CU-2 DX SPLIT SYSTEM:

SIZE UNITS IN ORDER TO ACCOMMODATE CLIMATE CONDITIONS OF THE REGION. ROOM CONDITIONS SHALL BE MAINTAINED AT THE FOLLOWING: SUMMER 72°F DB 50% RH, WINTER 68°F DB. THE OUTSIDE AIR REQUIREMENT SHALL BE BASED ON AN INTERMEDIATE OCCUPANCY OF 7.5 CFM PER PERSON. THE SYSTEM DEPICTED IS SIZED AROUND SAN ANTONIO, TEXAS CLIMATE (100°F DB/78° WB); THE UNIT IS SIZED AT 2.5 TONS TOTAL COOLING CAPACITY. THEREFORE THE AIR FLOW AND UNIT SIZE LISTED ACT ONLY AS A MODEL. ROUTE CONDENSATE PIPE TO SANITARY SEWER LINE. PROVIDE WITH PROGRAMMABLE THERMOSTAT AND LOCKABLE COVER. HEATING SHALL BE DECIDED BY THE CONTRACTING OFFICER.

EF-1 UPBLAST ROOF MOUNTED EXHAUST FAN:

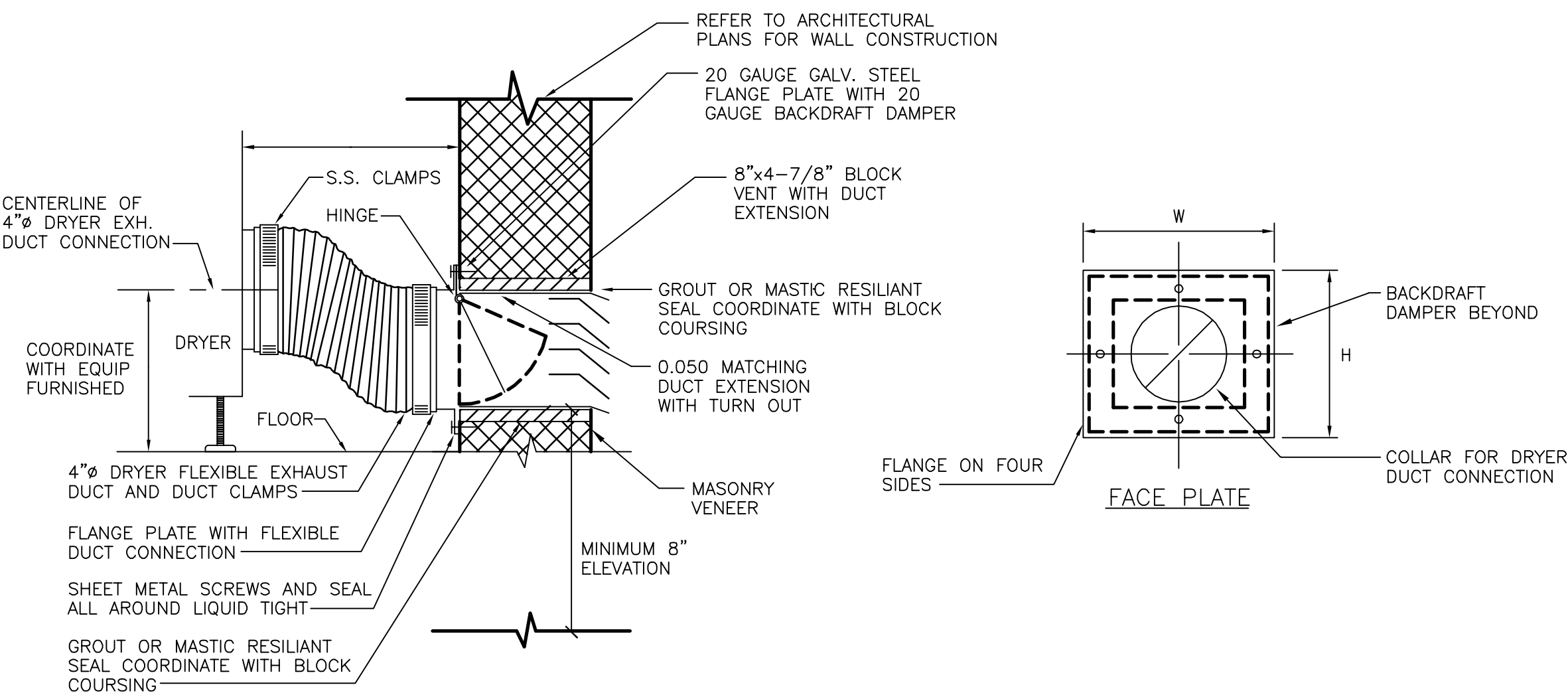
SIZE UNIT IN ORDER TO MAINTAIN A MINIMUM OF TEN AIR CHANGES PER HOUR IN THE PESTICIDE STORAGE. PROVIDE UNIT WITH BIRDSCREEN MESH. CONSTRUCT ROOF CURB TO ACCOMMODATE ROOF. FAN SHALL RUN CONTINUOUSLY. INTERLOCK WITH WALL SWITCH AND INDICATOR LIGHT.

EF-2 EF-3 DOWN BLAST ROOF MOUNTED EXHAUST FAN:

SIZE UNIT IN ORDER TO MAINTAIN THE INDICATED ROOM AIR CHANGES PER HOUR. PROVIDE UNIT WITH BIRDSCREEN MESH.

EF-4 INLINE CENTRIFUGAL EXHAUST FAN:

SIZE UNIT IN ORDER TO ASSIST RESIDENTIAL DRIER. EXHAUST SHALL BE ROUTED TO PENTHOUSE LOCATED ON THE ROOF. INTERLOCK FAN WITH WALL MOUNTED SWITCH. SUSPEND UNIT FROM STRUCTURE WITH ALL-THREAD AND SPRING ISOLATORS.



TYPICAL DRYER VENT DETAIL

NOT TO SCALE

GOLF COURSE MAINT. BLDG. -MECHANICAL

1/8"=1'-0"



SYMBOL	DESCRIPTION	DATE	APPROVAL	
REVISIONS				
Drawn by: <b>JF.</b>		<b>HEADQUARTERS AIR FORCE SERVICES AGENCY</b>		
<b>COORDINATION:</b>		Title:		
Engr:		UNITED STATES AIR FORCE		
Design and Construction:		NON-APPROPRIATED FUNDS PROJECT		
<b>APPROVAL:</b>		<b>35% AFNAF PROTOTYPES DESIGN</b>		
Director of Facilities		CONTRACT NO. NAFB185C00012		
date		<b>GOLF COURSE COMPLEX</b>		
Director of Operations		<b>MECHANICAL FLOOR PLAN</b>		
date		SCALE: <b>1/8"=1'-0"</b>		SHEET
		DRAWING NUMBER:		<b>M1.01</b>
				OF